What is claimed is:

1. A liposomal delivery system, comprising a stable liposome-forming lipid and a polymerizable colipid, a fraction of which polymerizable colipid polymerizes upon exposure to ionizing radiation, thereby destabilizing the liposomal membrane.

2. The liposome of claim 1, wherein the polymerizable colipid forms discrete domains within the liposome.

3. The liposome of claim 1, wherein the polymerizable colipid is randomly distributed throughout the liposome.

4. The liposome of claim 1, comprising from about 5 % to about 40 % polymerizable colipid.

5. The liposome of claim 1, wherein the liposome further comprises a steric stabilizer.

6. The liposome of claim 5, comprising from about 2 % to about 20 % steric stabilizer.

7. The liposome of claim 5, comprising from about 5 % to about 40 % polymerizable colipid and from about 2 % to about 20 % steric stabilizer.

8. The liposome of claim 5, wherein the steric stabilizer is a poly (ethylene glycol).

9. The liposome of claim 1, wherein said polymerizable colipid is selected from the group consisting of mono-, bis-, and heterobifunctional, diacetylenyl, acryloyl, methacryloyl, dienoyl, dienyl, sorbyl, muconyl, styryl, vinyl, and lipoyl colipid.

10. A liposomal delivery system of claim 1, further comprising a releasable agent.

11. The liposome of claim 10, comprising from about 5 % to about 40 % polymerizable colipid.

12. The liposome of claim 10, wherein the liposome further comprises a steric stabilizer.

13. The liposome of claim 12, comprising from about 2 % to about 20 % steric stabilizer.

14. The liposome of claim 12, comprising from about 5 % to about 40 % polymerizable colipid and from about 2 % to about 20 % steric stabilizer.

15. The liposome of claim 12, wherein the steric stabilizer is a poly (ethylene glycol).

16. The liposome of claim 10, wherein said polymerizable colipid is selected from the group consisting of mono-, bis-, and heterobifunctional, diacetylenyl, acryloyl, methacryloyl, dienoyl, dienyl, sorbyl, muconyl, styryl, vinyl, and lipoyl colipid.

17. The liposome of claim 10, wherein the releasable agent is a water soluble molecule.

18. The liposome of claim 10, wherein the releasable agent is a lipid associated molecule.

19. A pharmaceutical composition comprising a liposome of claim 10, wherein the releasable agent is a therapeutic agent encapsulated in or associated with the liposome, and a pharmaceutically acceptable carrier or diluent.

20. A method of treating a condition responsive to a liposome-encapsulated or associated therapeutic agent, comprising the steps of:

(i) administering to a patient a composition of claim 19;

(ii) and subjecting the patient to radiation in order to destabilize the liposome and release the therapeutic agent encapsulated in or associated with the liposome.

21. The method of claim 20, wherein the radiation ranges from about 5 to about 500 rads.

22. The method of claim 21, wherein the radiation ranges from about 50 to about 250 rads.

23. A pharmaceutical composition comprising a liposome of claim 10, wherein the releasable agent is a diagnostic agent encapsulated in or associated with the liposome, and a pharmaceutically acceptable carrier or diluent.

24. A method of diagnosing the presence or progression of a disease, comprising the steps of:

(i) administering to a patient a composition of claim 23,

(ii) subjecting the patient to ionizing radiation in order to destabilize the liposome and release the diagnostic agent encapsulated in or associated with the liposome; and

(iii) diagnosing said disease through the use of molecular imaging techniques.

25. The method of claim 24, wherein the radiation ranges from about 5 to about 500 rads.

26. The method of claim 25, wherein the radiation ranges from about 50 to about 250 rads.

27. A method of producing a radiation sensitive liposome of claim 10, comprising the steps of:

(i) drying the lipids that comprise the liposome,

(ii) hydrating said lipids with a buffer, comprising agents to be encapsulated or associated in a desired molar ratio to create hydrated bilayers,

(iii) converting said bilayers into liposomes; and

(iv) purifying the liposomes.

28. The method of claim 27, wherein the lipids are dried under a stream of an oxygen-free gas.

29. The method of claim 27, wherein the encapsulated or associated agents are therapeutic or diagnostic agents.

30. The method of claim 27, wherein the bilayers are converted into liposomes by ultrasonification or freeze-thawing-extrusion.

31. The method of claim 27, wherein the liposomes are purified by gel permeation chromatography.

32. A radiation sensitive liposome that can be targeted to a tumor site through attachment of at least one targeting peptide to the liposome of claim 10.

33. The radiation sensitive liposome of claim 32, wherein the peptide is selected from the group consisting of, antibodies, antibody fragments, and antigens.